

## **Adjustment Instruction INALFA bucky unit with format sensing**

### **FILING INSTRUCTIONS**

File this documentation in binder:

SMCM bucky DIAGNOST TH2

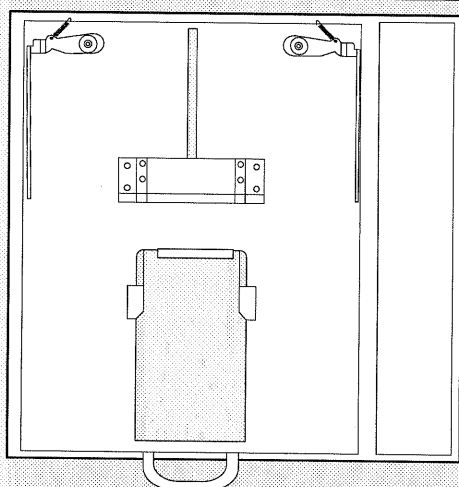


# PHILIPS

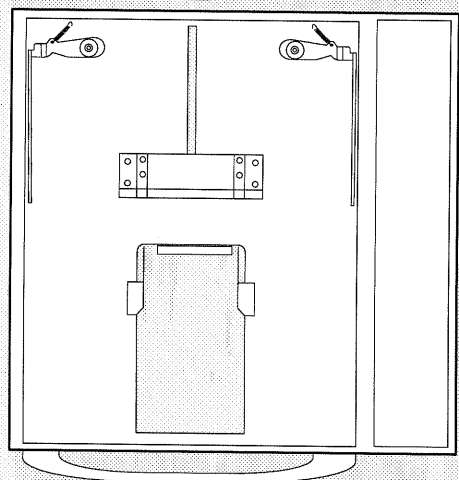
**Philips Medical Systems  
Development and Manufacturing Centre**

## Adjustment Instruction

**INALFA bucky unit with format sensing**



**left hand version 9848 500 20401/2/3/4  
right hand version 9848 500 35801/2/3/4**



**left hand version 9848 500 20404/5  
right hand version 9848 500 35804/5**

DMC Hamburg

Printed in Hamburg, Germany

© 1999 Philips Medical Systems  
ALL RIGHTS RESERVED

## SERVICE MANUAL – UNIT

### Adjustment Instruction

#### INALFA bucky unit with format sensing

Author: V. Neumann

In case there are any questions concerning this manual,  
please send this LOPAD via fax to 49/(0)40/5078 2481

File: Adjustm\_Instr\_INALFA\_993

---

#### List of pages and drawings (LOPAD)

Manual Order No: 4512 984 22091

0.5 (99.3) 223 mm (Rosa Karton)

1 (99.3)

2 (99.3)

3...27 (99.3)

---

## Adjustment Instruction

### INALFA bucky unit with format sensing

<b>Contents</b> .....	<b>3</b>
<b>Cassette Tray Check</b> .....	<b>5</b>
<b>Installing the Stop Block</b> .....	<b>6</b>
<b>Tools</b> .....	<b>7</b>
<b>INALFA Cassette Program</b> .....	<b>7</b>
<b>1. Cassette Recognition</b> .....	<b>7</b>
1.1. Metric / Inch Programming of the INALFA .....	7
1.1.1. Using of Firmware R6.1E vertical .....	7
1.2. Control Handle Display .....	7
<b>2. Cassette Program for INALFA bucky units with format sensing</b> .....	<b>8</b>
2.1. Centric Cassette Positioning .....	8
2.2. Eccentric Cassette Positioning .....	9
<b>Testtool for Measuring of Cassette Sizes</b> .....	<b>10</b>
<b>1. Cassette Sizes</b> .....	<b>10</b>
<b>2. Introduction</b> .....	<b>11</b>
<b>3. Testtool Use</b> .....	<b>12</b>
<b>4. Bit Pattern of Cassette Sizes</b> .....	<b>13</b>
4.1. INALFA bucky Unit Type No. xxxx xxx xxxx1, 2 or 3 .....	13
4.1.1. Centric Position .....	13
4.1.2. Eccentric Position .....	14
4.2. INALFA bucky Unit Type No. xxxx xxx xxxx4 or higher .....	15
4.2.1. Centric Position .....	15
4.2.2. Eccentric Position .....	16
<b>5. Trouble Shooting for INALFA Testtool</b> .....	<b>17</b>

<b>Template for Cassette Recognition .....</b>	<b>18</b>
<b>1. Introduction .....</b>	<b>18</b>
<b>2. Tools required .....</b>	<b>18</b>
<b>3. Template Use .....</b>	<b>18</b>
3.1. Test of 5" x 7" Cassette Size .....	18
3.2. Test of 9.5" x 9.5" Cassette Size .....	19
3.3. Test of 10" x 12" Cassette Size .....	19
<b>4. Adjustments for optimum Recognition of all Cassette Formats .....</b>	<b>20</b>
4.1. Preworks .....	20
4.2. Check and Adjustment of the horizontal Encoder Plate .....	21
4.2.1. Adjustment of the horizontal Encoder Plate .....	21
4.2.2. Adjustment of the 151mm Position .....	21
4.3. Adjustment of vertical Encoder Levers .....	22
4.4. Modification of all Sensors .....	22
4.5. Adjustment of the horizontal Encoder Plate to the Sensor .....	22
<b>5. Adjustment of the Sensor .....</b>	<b>23</b>
5.1. Adjustment of the Sensor horizontal .....	23
5.2. Adjustment of the Sensor vertical short .....	23
5.3. Adjustment of the Sensor vertical long .....	24
<b>6. Adjustment of Grid Release Switch .....</b>	<b>24</b>
<b>7. Adjustment of Cassette Present Switch .....</b>	<b>24</b>
<b>8. Check of the Cassette Size Recognition and its Tolerances .....</b>	<b>25</b>
8.1. Cassette Size Recognition vertical .....	25
8.2. Cassette Size Recognition horizontal .....	26
8.3. Switch Point of Cassette Size Recognition .....	26
<b>9. Final Works .....</b>	<b>26</b>
<b>Fixing Block .....</b>	<b>27</b>
<b>1. Placement of the Fixing Block .....</b>	<b>27</b>
<b>2. Assembly .....</b>	<b>27</b>
<b>3. Operation .....</b>	<b>27</b>

## Cassette Tray Check

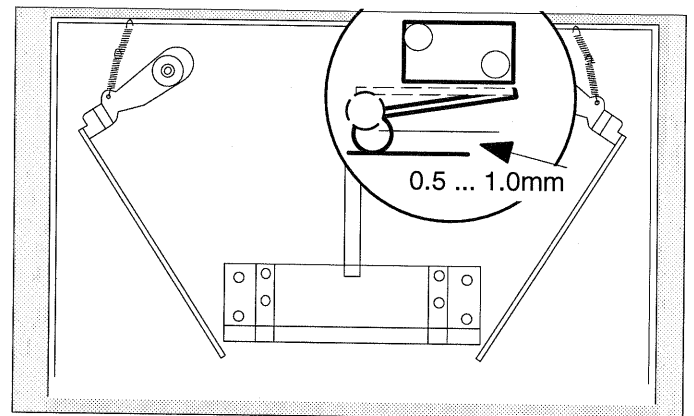
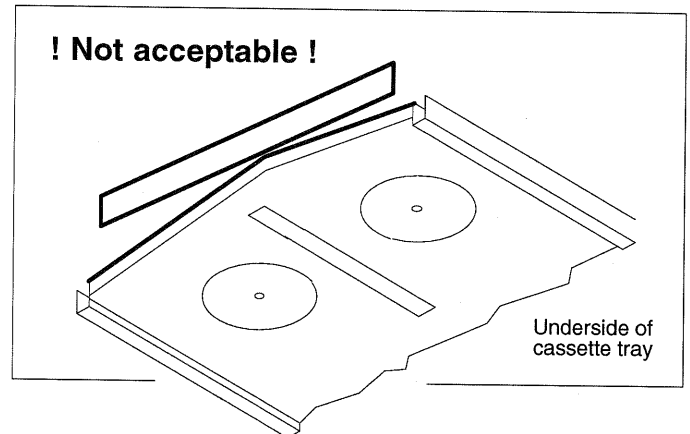
### Note:

In case a cassette tray must be replaced check the trailing edge on the new tray. Deformations could damage the amplimat chamber and can cause an sensing problem, cassette sizes are intermittently recognized.

- Check the trailing edge with a scale meter.  
+/-0.2mm are allowed.
- Reform the tray over a table edge if the trailing edge is bent more than +/-0.2mm.
- Check cassette present switch. By inserted cassette tray the spring plate must be movable 0.5 ... 1.0mm.
- If you find a deform cassette tray, please fill out the attached questionnaire and mail it to

**Bucky team Hamburg**  
Mr. V. Neumann

**FAX ++49 (40)5078 2348**



Remark: The trailing edge was bent + / - ..... mm

on ( date ) .....

to ( customer ) .....

from ( system engineer ) .....

Phone: .....

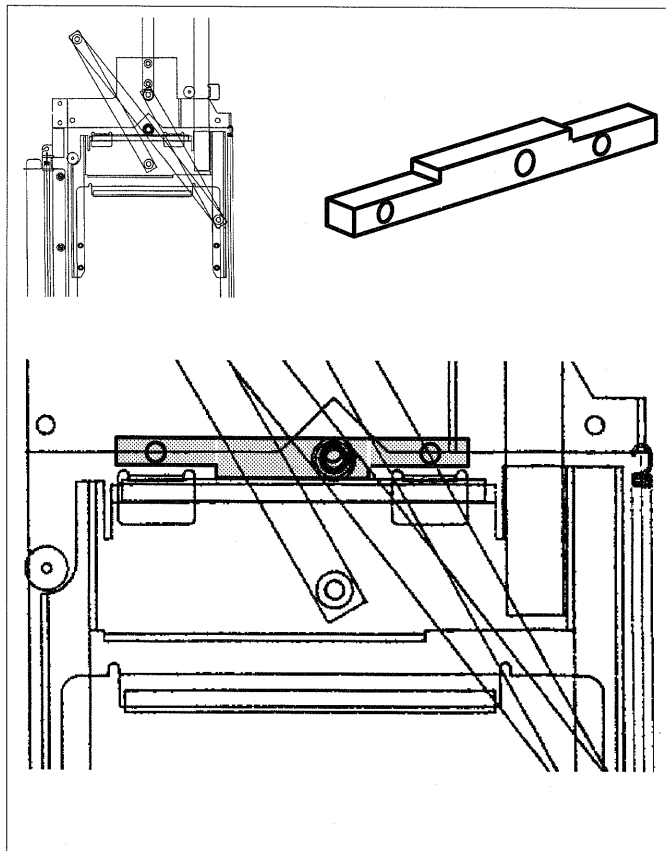
S/N of bucky unit .....

Order / invoice No. ....

## Installing the Stop Block

Cracking of the scissor arms after expanding will shear the center rotary pin.

- Check the mounting place for the stop block, if necessary plane.
- Use the stop block as template.
  - Fix the stop block with a clamp.
  - Mark the two drill holes by using a  $\varnothing 3.1$  mm drill.
- Remove the stop block.
- Drill the two holes.
- Countersink the two holes by using the  $90^\circ$  countersink top side (= where the cassette will be placed) only. The head of the countersunk screw should not stand over.
- Fit the stop block with the two countersunk screws M4x10. Fix the full screw (head and thread) with Loctite or equal.
- Position the scissor arm to the stop block. secure with a washer and a retaining ring.
- Check free movement of the scissor arms and proper positioning of the cassette.



## Tools

4512 131 17172	Template
4512 131 17981	INALFA Testtool
1312 502 37702	Glue SICOMET 50

## INALFA Cassette Program

### 1. Cassette Recognition

#### 1.1. Metric / Inch Programming of the INALFA

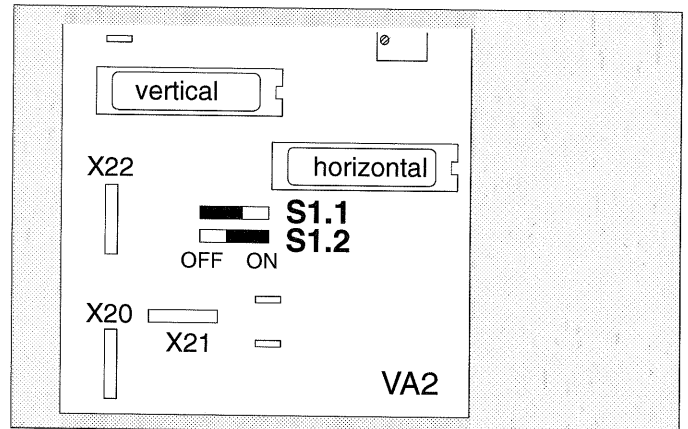
For correct cassette recognition set switch S1 on board VA2 to the preferred cassette program used on side.

S1.1 = OFF = inch ["]      S1.1 = ON = metric [cm]  
S1.2 = always ON

#### Note:

The tray is programmed for

- U.S. market      **S1.1 = OFF = inch**
- other countries      **S1.1 = ON = metric**



##### 1.1.1. Using of Firmware R6.1E vertical

Program **inch** if

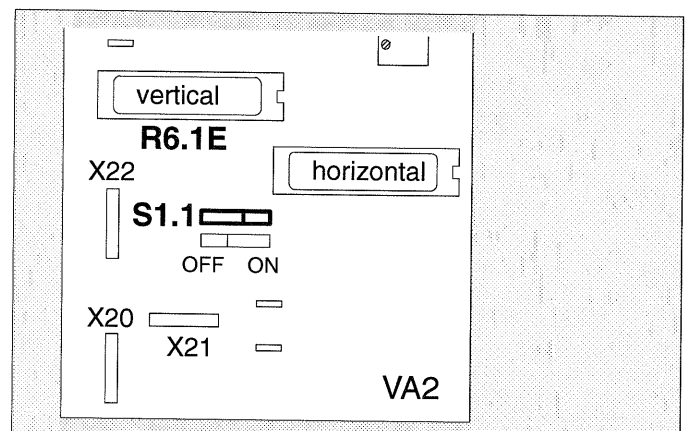
- 10" or 11" types of cassettes
- 11" x 14" and 30cm x 35cm cassettes
- 11" x 14" and 24cm x 30cm cassettes

are in use.

Program **metric** if

- 24cm or 30cm types of cassettes
- 24cm x 30cm and 10" x 12" cassettes

are in use.



### 1.2. Control Handle Display

The delivered value of the cassette size will be displayed on the control handle display as inch or centimeter.

- Program the bucky controller to the preferred cassette program
  - Call program X-Scope, System Configuration, Cassette Sizes, Metric [cm] or Imperial ["]



## 2. Cassette Program for INALFA bucky units with format sensing

with firmware R6.1E vertical on tray side, inserting tolerance  $\pm 5\text{mm}$  for

### 2.1. Centric Cassette Positioning

	Film size cm	Film size inch	Displayed as cm	Displayed as inch	Remark, tested on side
1	13 x 18		13 x 18	5 x 7	
1a	18 x 13		18 x 13	7 x 5	
2		5 x 7	13 x 18	5 x 7	
2a		7 x 5	18 x 13	7 x 5	
3		6.5 x 8.5	17 x 22	6.5 x 8.5	
3a		8.5 x 6.5	22 x 17	8.5 x 6.5	
4	18 x 24		18 x 24	7 x 9.5	
4a	24 x 18		24 x 18	9.5 x 7	
5	18 x 43		18 x 43	7 x 17	
5a	43 x 18		43 x 18	17 x 7	
6		7 x 17	18 x 43	7 x 17	
6a		17 x 7	43 x 18	17 x 7	
7		8 x 10	20 x 24	8 x 10	
7a		10 x 8	24 x 20	10 x 8	
8	20 x 40		20 x 40	8 x 16	
8a	40 x 20		40 x 20	16 x 8	
9	24 x 24		24 x 24	9.5 x 9.5	
10		9.5 x 9.5	24 x 24	9.5 x 9.5	
11	24 x 30		24 x 30	9.5 x 12	
11a	30 x 24		30 x 24	12 x 9.5	30cm x 25cm / 12" x 10" <b>1)</b>
12		10 x 12	25 x 30	10 x 12	
12a		12 x 10	30 x 25	12 x 10	12" x 9.5" / 30cm x 24cm <b>2)</b>
13		11 x 14	28 x 35	11 x 14	
13a		14 x 11	35 x 28	14 x 11	
14	30 x 30		30 x 30	12 x 12	
15	30 x 35		30 x 35	12 x 14	
15a	35 x 30		35 x 30	14 x 12	35cm x 28cm / 14" x 11" <b>3)</b>
16	30 x 40		30 x 40	12 x 16	
16a	40 x 30		40 x 30	16 x 12	
17	35 x 35		35 x 35	14 x 14	
18		14 x 14	35 x 35	14 x 14	
19	35 x 43		35 x 43	14 x 17	
19a	43 x 35		43 x 35	17 x 14	
20		14 x 17	35 x 43	14 x 17	
20a		17 x 14	43 x 35	17 x 14	
21	40 x 40		40 x 40	16 x 16	

Remark:

If cassettes 11" and 24cm are used (vertical) the displayed size is .....**1)**

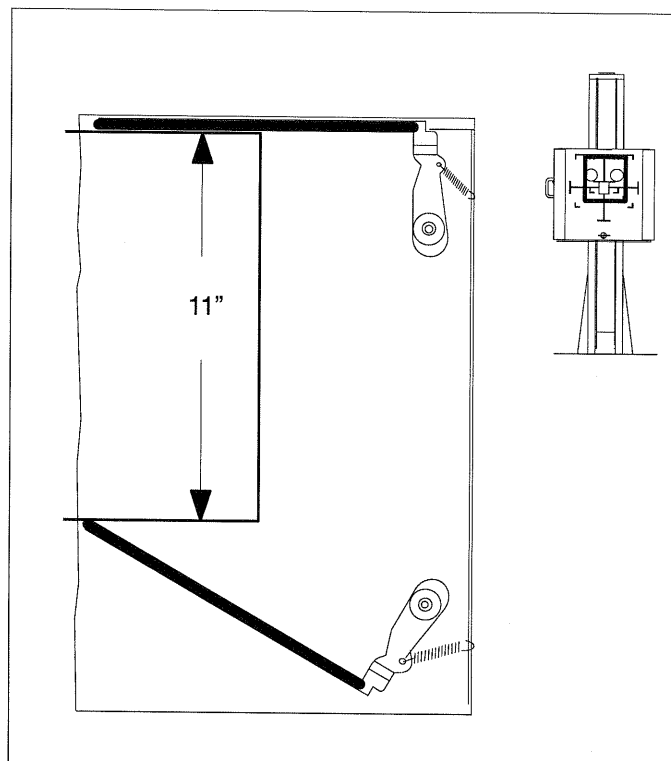
If cassettes 10" and 24cm are used (vertical) the displayed size is .....**2)**

If cassettes 11" and 30cm are used (vertical) the displayed size is .....**3)**

## 2.2. Eccentric Cassette Positioning

### Note:

The smallest detectable vertical cassette size is 11" by eccentric positioning.



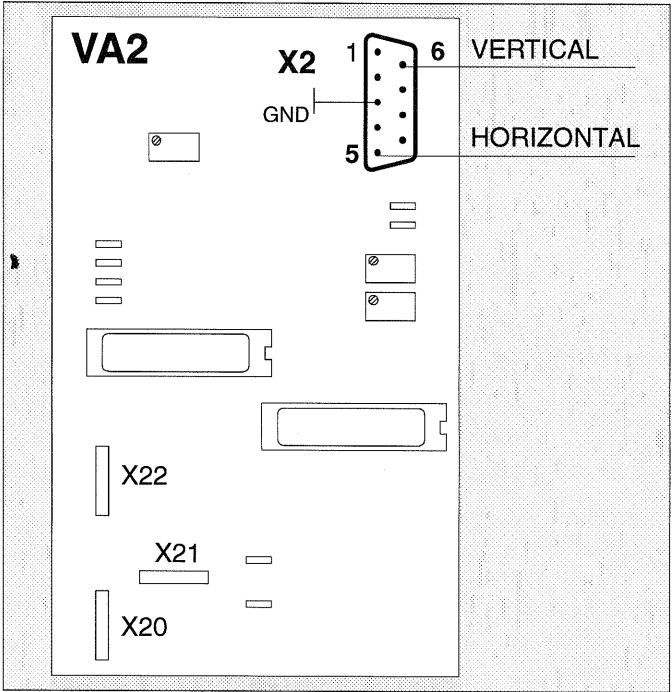
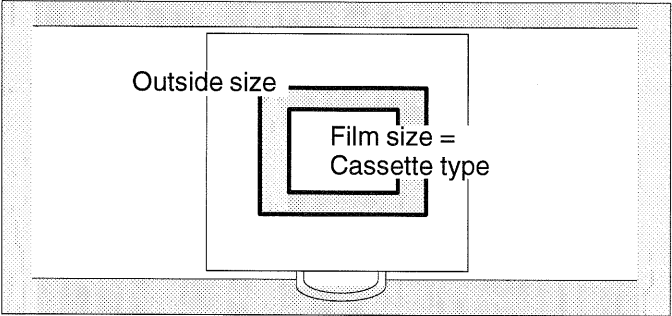
	Film size cm	Film size inch	Displayed as cm	Displayed as inch	Remark, tested on side
8a	40 x 20		40 x 20	16 x 8	
11a	30 x 24		30 x 24	12 x 9.5	
12a		12 x 10	30 x 25	12 x 10	
13		11 x 14	28 x 35	11 x 14	
13a		14 x 11	35 x 28	14 x 11	
14	30 x 30		30 x 30	12 x 12	
15	30 x 35		30 x 35	12 x 14	
15a	35 x 30		35 x 30	14 x 12	
16	30 x 40		30 x 40	12 x 16	
16a	40 x 30		40 x 30	16 x 12	
17	35 x 35		35 x 35	14 x 14	
18		14 x 14	35 x 35	14 x 14	
19	35 x 43		35 x 43	14 x 17	
20		14 x 17	35 x 43	14 x 17	
21	40 x 40		40 x 40	16 x 16	

Testtool for Measuring of Cassette Sizes

1. Cassette Sizes

The listed cassette sizes can be used in all types of bucky trays, is valid from bucky controller firmware R1.5.

Cassette type	Outside size [mm]	Analoge signal [V] on VA2 X2:5/6
5"	154.5	2.6
130mm	157.5	2.6
150mm	177.5	3.0
6"	179.5	3.0
6.5"	192.6	3.3
7"	205.3	3.6
180mm	207.5	3.6
200mm	227.5	4.0
8"	230.7	4.0
8.5"	243.4	4.3
240mm	267.5	4.8
9.5"	268.8	4.8
10"	281.5	5.0
11"	306.9	5.6
300mm	327.5	6.0
12"	332.3	6.0
14"	383.1	7.1
350mm	383.5	7.1
400mm	427.5	8.0
16"	433.9	8.0
17"	459.3	8.6
430mm	459.5	8.6
values of voltages+/-0.3V or +/-0.5V see 3.Testtool Use		



The analoge signals can be displayed also.

- Call PC program VT100. The prompt Bucky> should appear after hitting ↵.
- Type show analogue↵

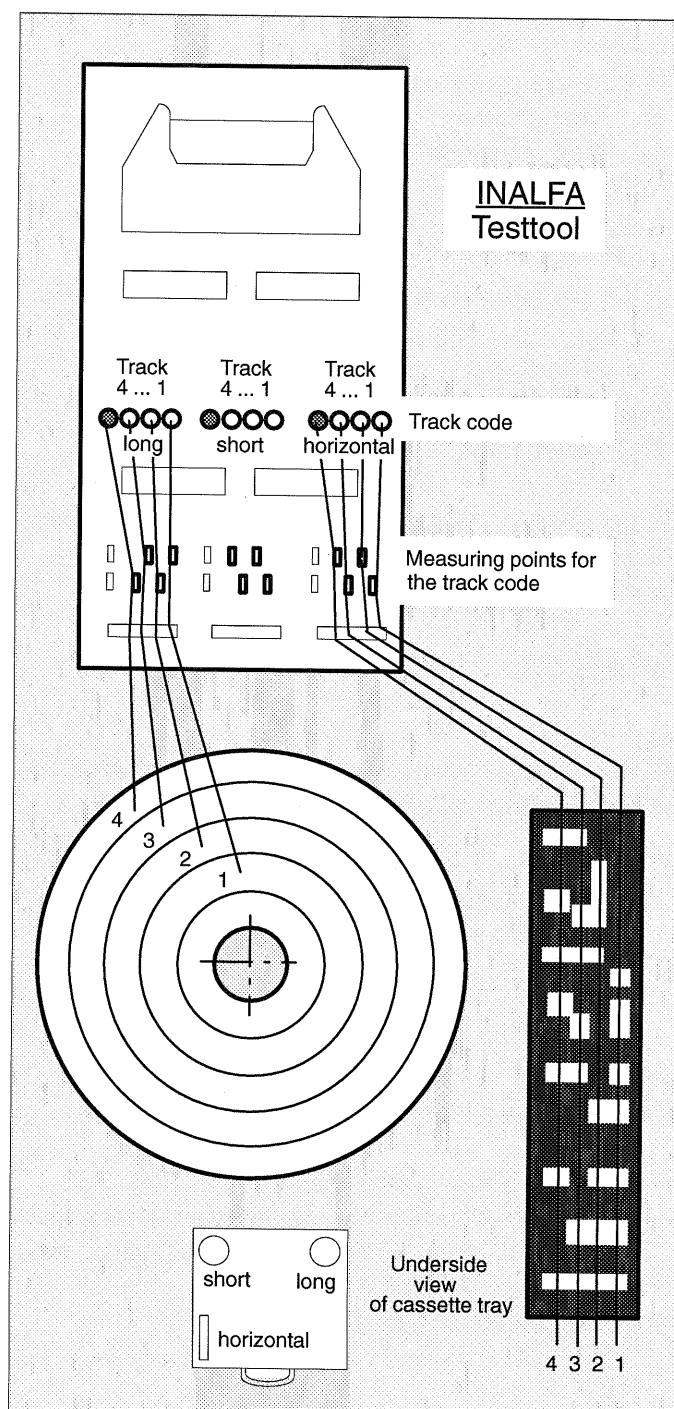
The values of the analoge signals will be shown on the PC screen.

## 2. Introduction

The testtool is a simple unit for measuring of cassette sizes and testing the cassette present switch.

The bit pattern of the tracks of the encoder disks 'long' & 'short' and the encoder plate are displayed via LEDs.

The signal level is measurable at measuring points.



### 3. Testtool Use

- Insert the testtool.
  - Disconnect on the board **VA2**
    - X20** (short)
    - X21** (horizontal)
    - X22** (long)
  - connect them to the adequate connectors of the testtool.
  - Connect the adequate connectors to the board **VA2**.
  - Connect the ground cable with its clamp to **GND** of the board **VA2**.
- Insert a cassette.
  - The cassette present switch should be active.

The LEDs will show the track code for the cassette size after power on. See also Cassette Sizes, H means: LED = ON, L means: LED = OFF.

The signals can be tested at the measuring points.

**Note:**

The signal levels of H or L are in function as shown in table, see 6. Bit Pattern of Cassette Sizes.

INALFA bucky unit Type No. xxxx xxx xxxx1 or 2 / 3 / 4 / 5

H = >11.2V (+/-0.4V)

L = < 11.2V (+/-0.4V)

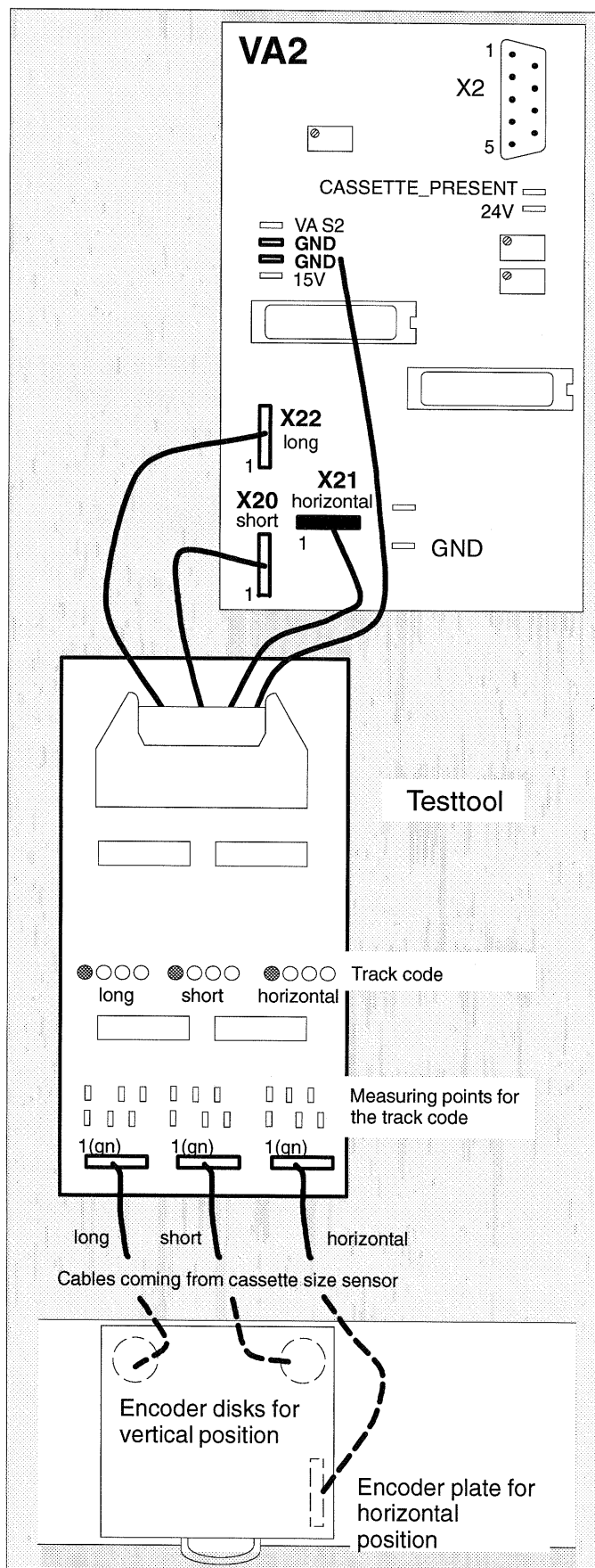
**Note:**

The trigger level for the test box is 6.0V for "H" or "L" recognition.

The trigger level for the VA2 board is 11,2V (+/-0.4V).

So in case the bit pattern as shown on the testtool is different from the table in the manual, the "real voltage value" on each trade must be checked.

(Measuring points are on testtool side).



## 4. Bit Pattern of Cassette Sizes

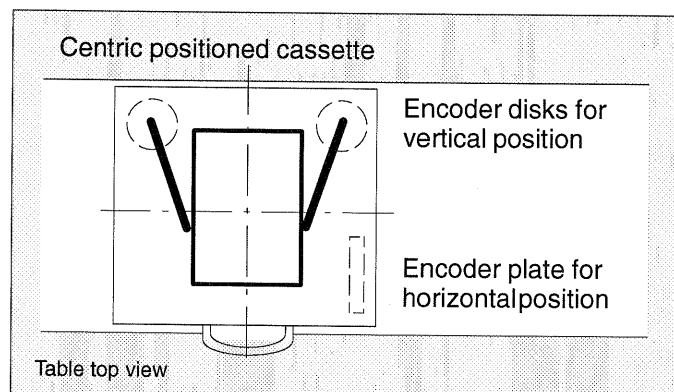
### 4.1. INALFA bucky Unit Type No. xxxx xxx xxxx1, 2 or 3

#### 4.1.1. Centric Position

The cassette must be positioned symmetrical, respect the allowable variation.

**Note:**

Table below is only to use for INALFA bucky unit of Type No. with endrelease 1, 2 or 3 !



Metric size [cm]	Imperial size ["]	Voltage [V] at VA2 X2:5/6  +/-0.3V	Signals at the measuring points for <b>ENCODER DISKS</b> <b>ENCODER PLATE</b> long = short = horiz.				Established values shown on the INALFA test tool			
			X20/21/22:				X20 or X22:			
			3	6	5	4	3	6	5	4
			Track			red	Track			red
			1	2	3	4	1	2	3	4
no cassette		0.0	L	L	L	L				
13	5	2.6	H	H	L	L				
15	6	3.0	L	L	H	L				
	6.5	3.3	H	L	H	L				
18	7	3.6	L	H	H	L				
20	8	4.0	H	H	H	L				
	8.5	4.3	L	L	L	H				
24	9.5	4.8	H	L	L	H				
25	10	4.8	H	L	L	H				
28	11	5.6	L	H	L	H				
30	12	6.0	L	L	H	H				
35	14	7.1	H	L	H	H				
40	16	8.0	L	H	H	H				
43	17	8.6	H	H	H	H				

**NOTE:**

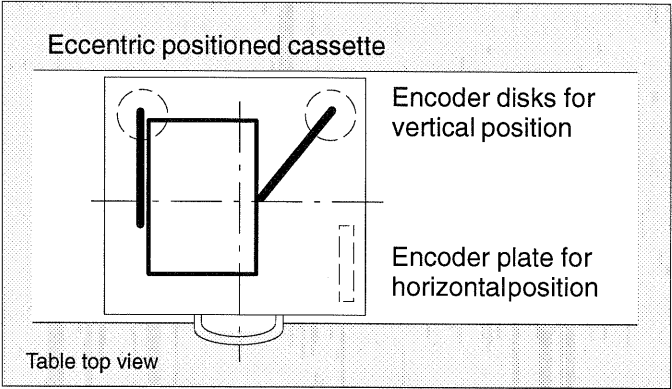
All other cassette sizes will be not recognized.

Adjustment of INALFA

4.1.2. Eccentric Position

The cassette must be positioned to the left or right side total, respect the allowable variation.

Signals at the measuring points for the **encoder plate horizontal** see table of Centric Position.



Note:

Table below is only to use for INALFA bucky unit of Type No. with endrelease 1, 2 or 3 !

Metric size [cm]	Imperial size ["]	Voltage [V] at VA2 X2:5/6  +/-0.3V	Signals at the measuring points for <b>ENCODER DISKS</b> long = short	Established values shown on the INALFA test tool
			X20 or X22: 3   6   5   4	X20 or X22: 3   6   5   4
			Track 1   2   3   4   red	Track 1   2   3   4   red
no cassette			<b>L   L   L   L</b>	
13	5		not possible	
15	6		not possible	
	6.5		not possible	
18	7		not possible	
20	8		not possible	
	8.5		not possible	
24	9.5		not possible	
25	10		not possible	
28	11		not possible	
30	12	6.0	<b>H   L   L   H</b>	
35	14	7.1	<b>L   L   H   H</b>	
40	16	8.0	<b>L   H   L   H</b>	
43	17	8.6	<b>H   H   H   H</b>	
			The track code of the other encoder disk (long or short) is allways <b>H H H H</b>	

NOTE:

All other cassette sizes will be not recognized.

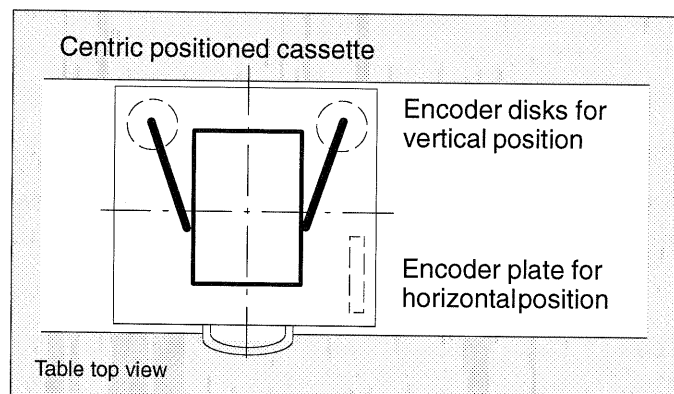
## 4.2. INALFA bucky Unit Type No. xxxx xxx xxxx4 or higher

### 4.2.1. Centric Position

The cassette must be positioned symmetrical, respect the allowable variation.

**Note:**

Table below is only to use for INALFA bucky unit of Type No. with endrelease 4 !



Metric size [cm]	Imperial size ["]	Voltage [V] at VA2 X2:5/6  +/-0.5V	Signals at the measuring points for <b>ENCODER DISKS</b> long = short	Established values shown on the INALFA test tool long = short	Signals at the measuring points for <b>ENCODER PLATE</b> horizontal	Established values shown on the INALFA test tool horizontal
			X20/22: 3 6 5 4	X20 or X22: 3 6 5 4	X21: 3 6 5 4	X21: 3 6 5 4
			Track 1 2 3 4	Track 1 2 3 4	Track 1 2 3 4	Track 1 2 3 4
no cassette		0.0	L H L L		L L L L	
13	5	2.6	L H H H		L L H H	
15	6	3.0	L H H L		L H L L	
	6.5	3.3	L H L L		L H L H	
18	7	3.6	L H L H		L H H L	
20	8	4.0	L L L H		L H H H	
	8.5	4.3	L L L L		H L L L	
24	9.5	4.8	L L H L		H L L H	
	10	5.1	L L H H		H L H L	
28	11	5.6	H L H H		H L H H	
30	12	6.0	H L H L		H H L L	
35	14	7.1	H L L L		H H L H	
40	16	8.0	H L L H		H H H L	
43	17	8.6	H H H H		H H H H	

**NOTE:**

All other cassette sizes will be not recognized.



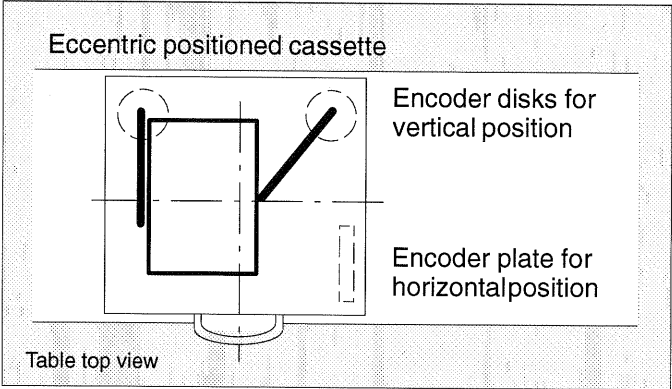
4.2.2. Eccentric Position

The cassette must be positioned to the left or right side total, respect the allowable variation.

Signals at the measuring points for the **encoder plate horizontal** see table of Centric Position.

Note:

Table below is only to use for INALFA bucky unit of Type No. with endrelease 4 !



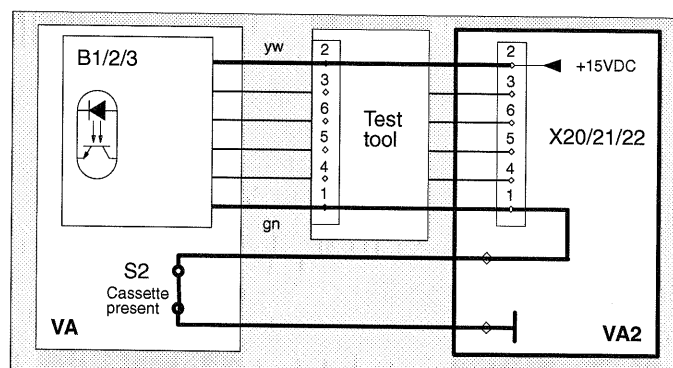
Metric size [cm]	Imperial size ["]	Voltage [V] at VA2 X2:5/6  +/-0.3V	Signals at the measuring points for <b>ENCODER DISKS</b> long or short				Established values shown on the INALFA test tool			
			X20 or X22:				X20 or X22:			
			3	6	5	4	3	6	5	4
			Track			red	Track			red
			1	2	3	4	1	2	3	4
no cassette		0.0	L	L	L	L				
13	5		not possible							
15	6		not possible							
	6.5		not possible							
18	7		not possible							
20	8		not possible							
	8.5		not possible							
24	9.5		not possible							
	10		not possible							
	11	5.6	L	H	H	H				
	12	6.0	L	H	H	L				
	12	6.0	L	H	L	L				
	12	6.0	L	H	L	H				
	12	6.0	L	L	L	H				
	14	7.1	L	L	H	H				
	14	7.1	H	L	H	H				
35	14	7.1	H	L	H	L				
	16	8.0	H	L	L	L				
	17		not possible							
			The track code of the other encoder disk (long or short) is allways H H L H							

NOTE:

All other cassette sizes will be not recognized.

## 5. Trouble Shooting for INALFA Testtool

- No function of the testtool.
  - Check the power supply 15VDC.
  - Check GND connection to the board VA2.
- No bit pattern will be displayed.
  - Check the cassette present switch.



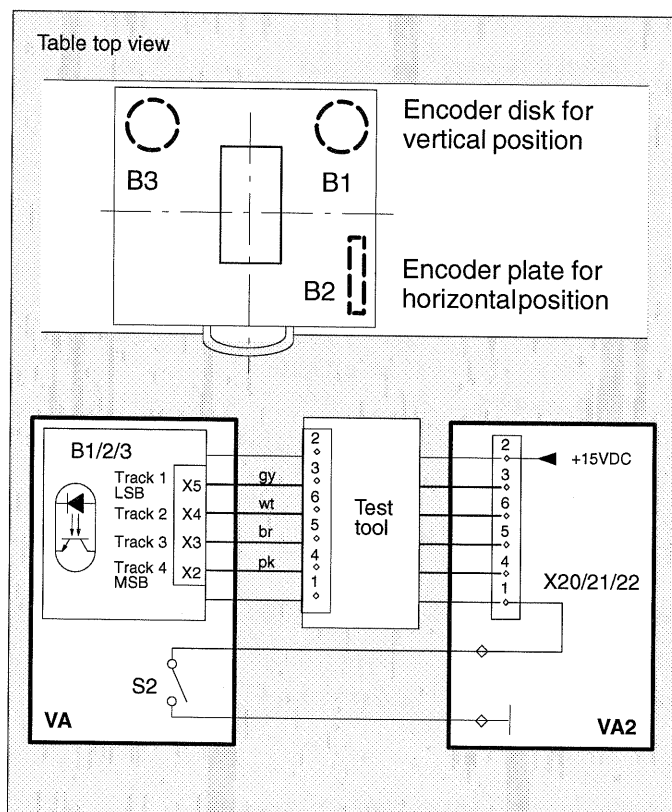
The cassette present switch **VAS2** enables the signals of the opto couplers **B1**, **B2**, **B3**. The combination of the bit patterns will be changed to an analogous signal via the **PROMs** and **D/A**-converters.

### Signal level of the opto couplers

Version Rel. 1 / Rel. 2 / Rel. 3 / Rel. 4

L = < 11.3VDC

H = > 11.3VDC



## Template for Cassette Recognition

### 1. Introduction

Since the whole dimensioning of the trays does not correspond to the sensor positions, manipulations are necessary. The exact encoder position is determined by setting the respective photo coupler.

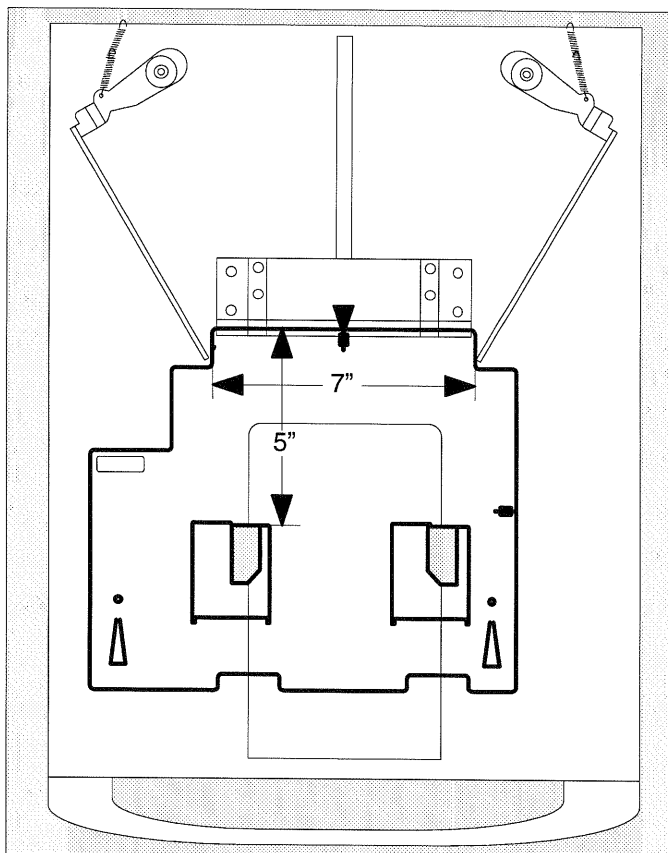
### 2. Tools required

- 2x extension cable about 2 to 3m, 9pole Sub-D
- Multimeter
- INALFA test box
- Mixed adhesive / Super glue                      Code No.
- Permanent waterproof felt-tip pencil
- Measuring tape, vernier caliper
- Feeler gauge
- Cassettes
  - 9.5" x 12"      (24cm x 30cm)
  - 10" x 12"      (25cm x 30cm)
  - 5" x 7"          (13cm x 18cm or 18cm x 24cm)
  - 14" x 11"      (35cm x 28cm)
  - or use
- Template for cassette recognition              Code No.

### 3. Template Use

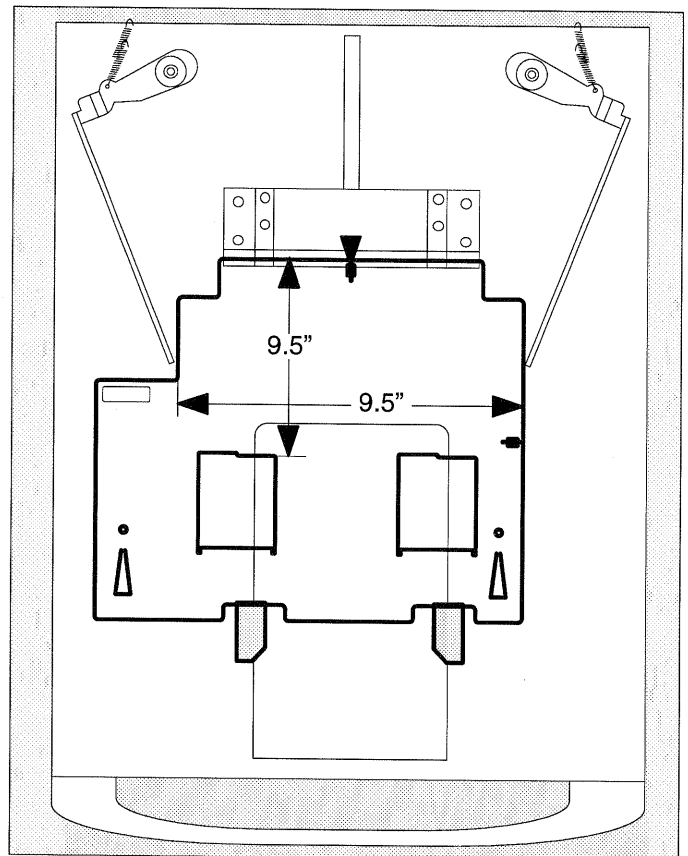
#### 3.1. Test of 5" x 7" Cassette Size

- Insert the template as shown in the figure
  - Center the template to the mark
- If the test fails adjustment is necessary



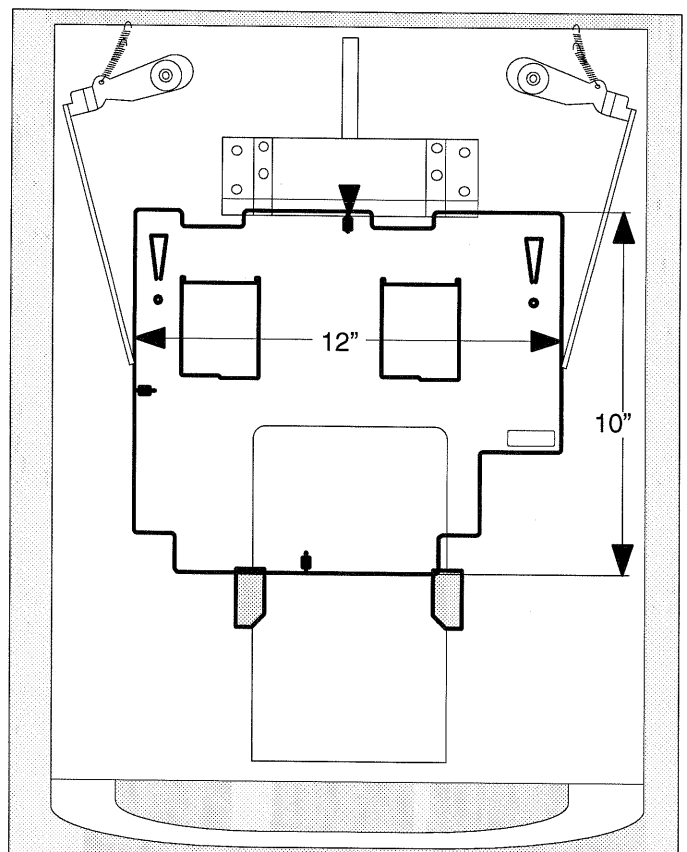
### 3.2. Test of 9.5" x 9.5" Cassette Size

- Insert the template as shown in the figure
  - Center the template to the mark
- If the test fails adjustment is necessary



### 3.3. Test of 10" x 12" Cassette Size

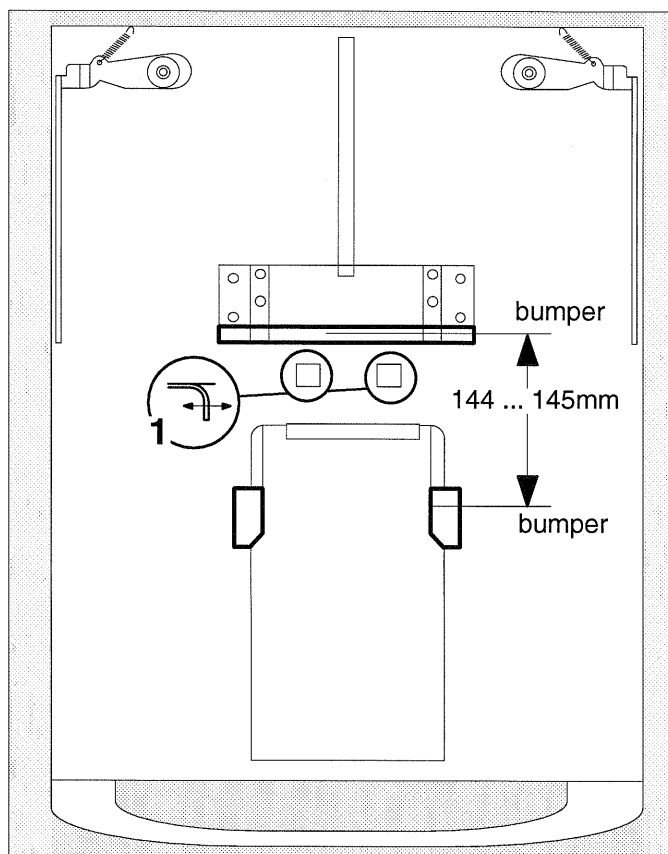
- Insert the template as shown in the figure
  - Center the template to the mark
- If the test fails adjustment is necessary



## 4. Adjustments for optimum Recognition of all Cassette Formats

### 4.1. Preworks

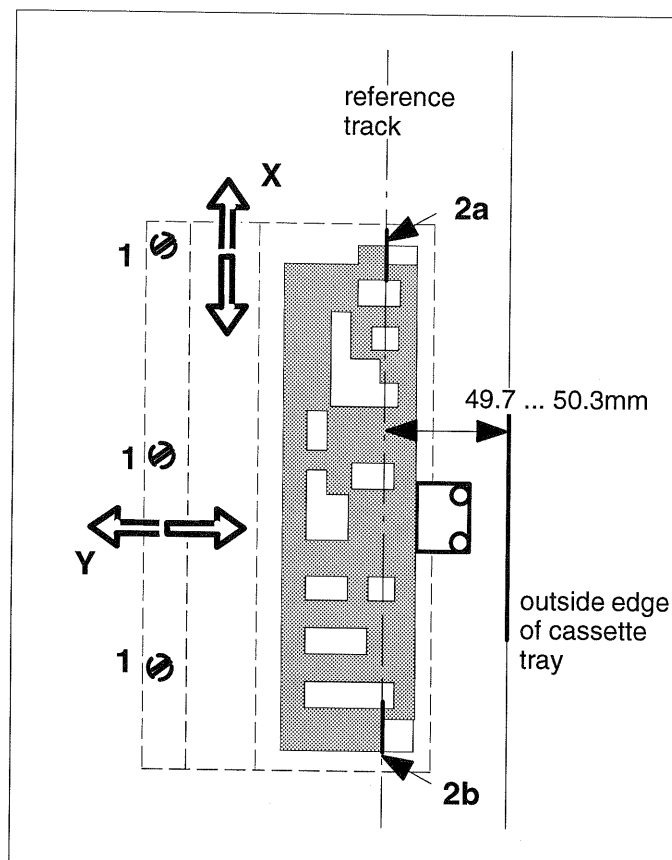
- Remove the cassette tray from the cassette loader
- Remove the cassette loader
- **When no cassette** is inserted but a cassette size will be recognized check distance of bumper to bumper . To modify the distance bend the stoppers **1**.



## 4.2. Check and Adjustment of the horizontal Encoder Plate

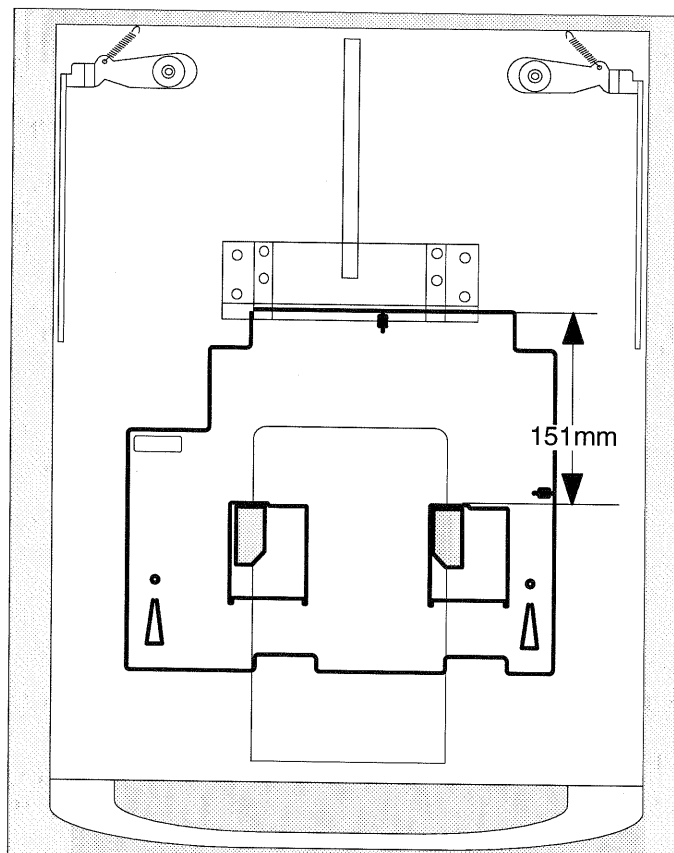
### 4.2.1. Adjustment of the horizontal Encoder Plate

- Measure the distance between the cassette tray and the **reference track**, distance = **49.7 ... 50.3mm**.
- Measure the distance at **2a** & **2b**
  - without inserted cassette
  - with a horizontal inserted 14" cassette
- Fasten screws.



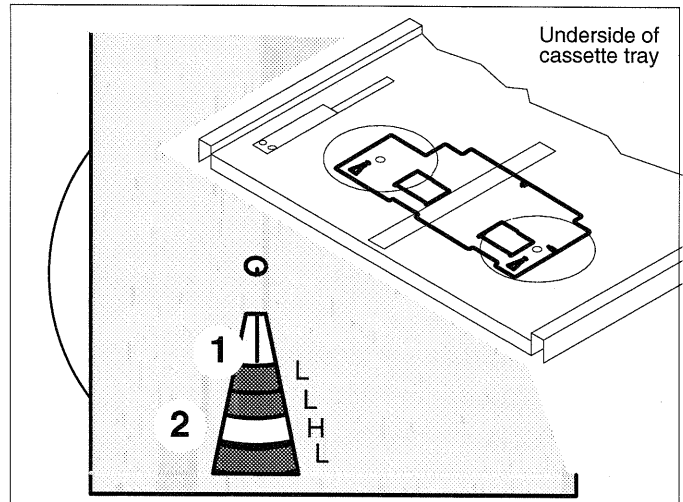
### 4.2.2. Adjustment of the 151mm Position

- Connect the cassette loader with the extension cables to the boards VA1 and VA2.
- Position the template between the clamps such that it is in 151mm position.
- Via loosen screws 1 displace the horizontal encoder plate in direction **X** until the relay RY2 for "cassette present" recognition on the board VA1 pulls up audible.
- Mark the position of the horizontal encoder plate to the tray.
- Do not misalign the adjustment (as done under **Adjustment of the horizontal Encoder Plate**).



### 4.3. Adjustment of vertical Encoder Levers

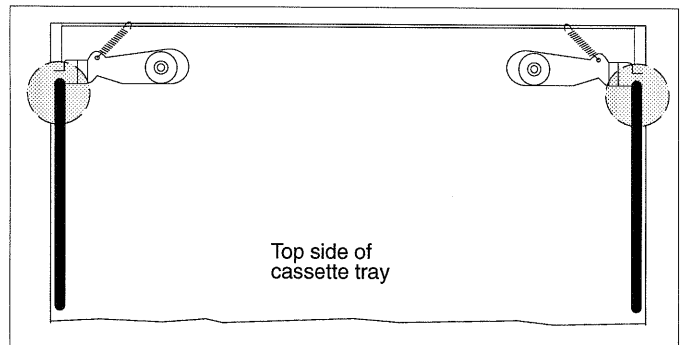
- Insert a cassette 9.5" x 12" (24cm x 30cm), 9.5" in vertical direction.
- Position the template. the bit pattern **L L H L** for 9.5" must be visible in the triangle of the template.



#### Note

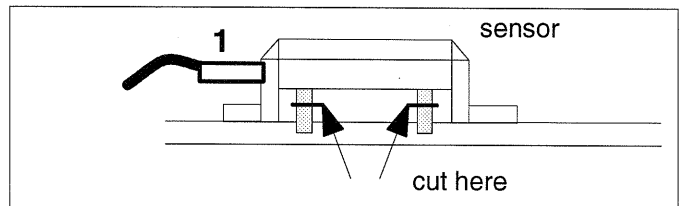
*The sensing arm must be mechanically adjusted only in the marked area. After finishing check that the arm is fully supported by the sides of the tray.*

- Check position of both encoder disks.



### 4.4. Modification of all Sensors

- Mark the sensor position before removing the sensor.
- Shorten the guide pins about 3mm for freely placement.
- Re-install the sensors.  
Make sure that the green plugs **1** are proper engaged to the sensors.

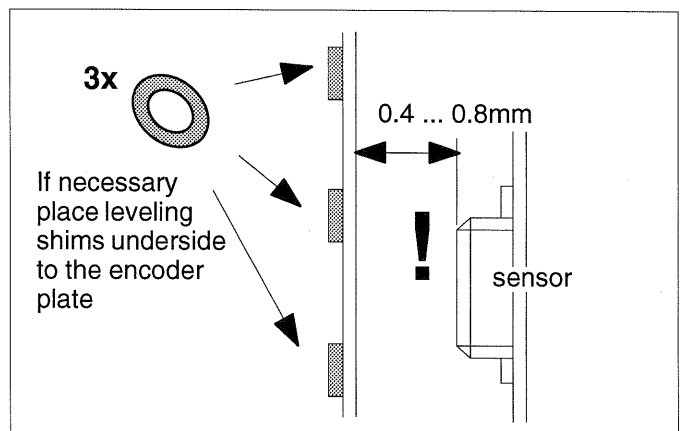


### 4.5. Adjustment of the horizontal Encoder Plate to the Sensor

#### Note:

Do not scratch the sensors!

- Check distance = 0.4 ... 0.8mm between the horizontal encoder plate and the sensor. Adjust distance with leveling shims.

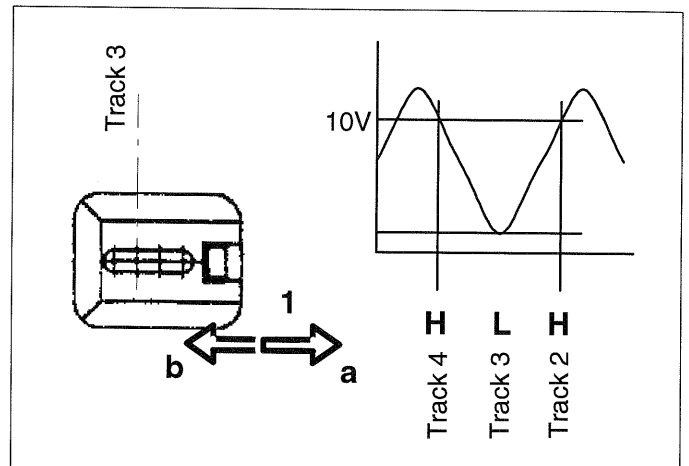


## 5. Adjustment of the Sensor

- Mark the sensor position before moving the sensor.  
**1** Find the minimal voltage value of **Track 3** by moving the sensor of typical 1mm in direction **a** or **b**

To define the lowest signal value for detection the "black bit" of the track, the following procedure will be done.

- Connect the cassette loader with the extension cables to the boards VA1 and VA2.
- Connect the testtool for measuring of different cassette sizes, see the manual Testtool



### 5.1. Adjustment of the Sensor horizontal

- Insert a cassette **10"x12"**  
**10" = horizontal.**
- Connect the multimeter to board VA2
  - **X21:6** (white lead)
  - Ground

Adjustment procedure:

- Switch ON the system.
- Obtain the voltage level with the multimeter.
- 1a** Displace the sensor such that the signal at **track 4 = 10V**, mark this position with a pencil.
- 1b** Displace the sensor such that the signal at **track 2 = 10V**, mark this position with a pencil.
- Position the sensor between the two marks, there will be the lowest signal. Mark this position as **track 3**.  
 Fix the sensor with super glue.
- Make a note of the voltage value

$U_{\min} = \text{_____ V}$

### 5.2. Adjustment of the Sensor vertical short

- Insert a cassette **18cm x 24cm / 13cm x 18cm**  
**18cm = vertical.**
- Connect the multimeter to board VA2
  - **X20:5** (brown lead)
  - Ground
- Go on with the adjustment procedure as discribed, see 4.1.
- Make a note of the voltage value (4.822 ... 4.476V)

$U_{\min} = \text{_____ V}$



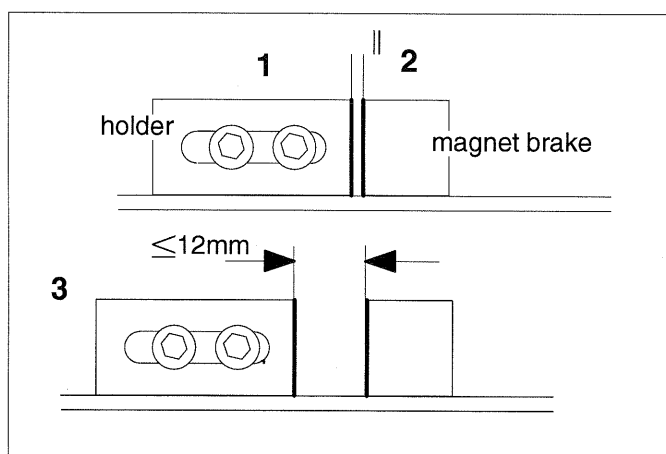
### 5.3. Adjustment of the Sensor vertical long

- Insert a cassette **18cm x 24cm / 13cm x 18cm**  
18cm = **vertical**.
- Connect the multimeter to board VA2
  - **X22:5** (brown lead)
  - Ground
- Go on with the adjustment procedure as discribed, see 4.1.
- Make a note of the voltage value (5.829 ... 5.619V)

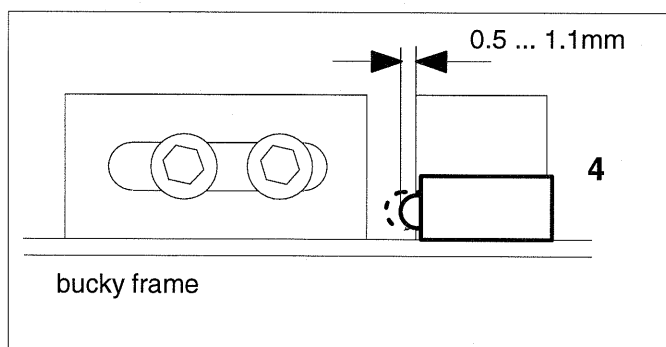
$U_{\min} = \text{_____ V}$

### 6. Adjustment of Grid Release Switch

- Switch ON the power supply for the INALFA cassette loader.
- Check paralism of the holder **1** to the attracted magnet brake **2**.
- Switch OFF the power supply for the INALFA cassette loader. **3** The distance between the holder and the magnet brake should be  $\leq 12\text{mm}$ .

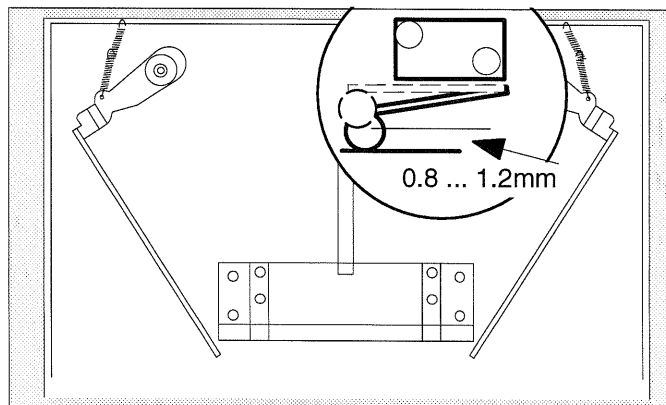


- Check the switch position.
  - **4** The distance of the magnet brake to the switching over point must be 0.5 ... 1.1mm.



### 7. Adjustment of Cassette Present Switch

- Check cassette present switch. By inserted cassette tray the spring plate must be movable 0.8 ... 1.2mm.

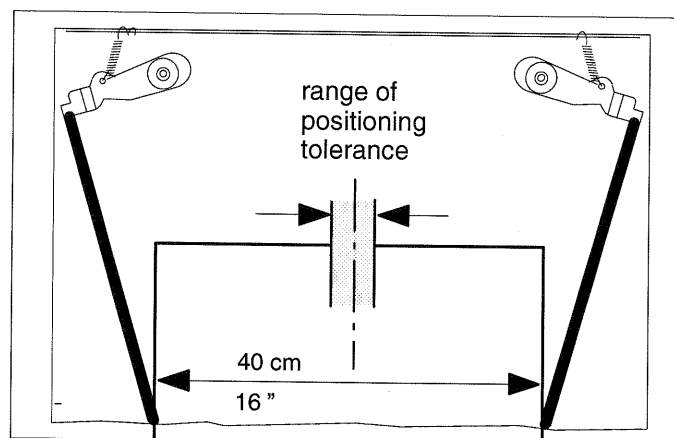


## 8. Check of the Cassette Size Recognition and its Tolerances

### 8.1. Cassette Size Recognition vertical

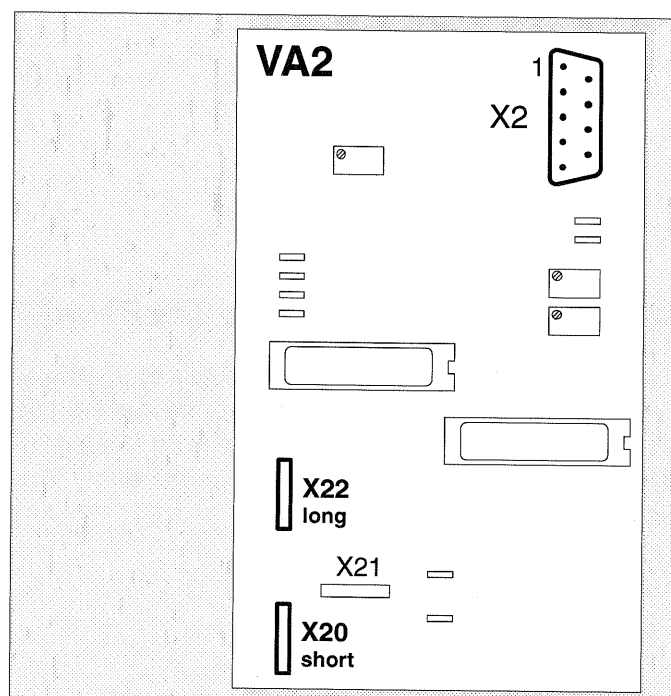
Check with 16" cassette

- Insert a cassette 16" x 12" = 40cm x 30cm, 16" to **vertical**.
- The cassette size must be recognized within the range of  $\pm 5$  mm out of center. See displayed value on the control handle.



Check with 9.5" x 12" & 10" x 12" cassettes

- Check the cassette sizes with the inserted cassette, 9.5" = **vertical**.
- The cassette sizes must be recognized within the range of  $\pm 2$  mm out of center. See bit pattern on the connectors X20 and X22.
- Check signals at the connectors, see table.  
If the signals fails re-adjust the respective sensor arm, re-check the signals

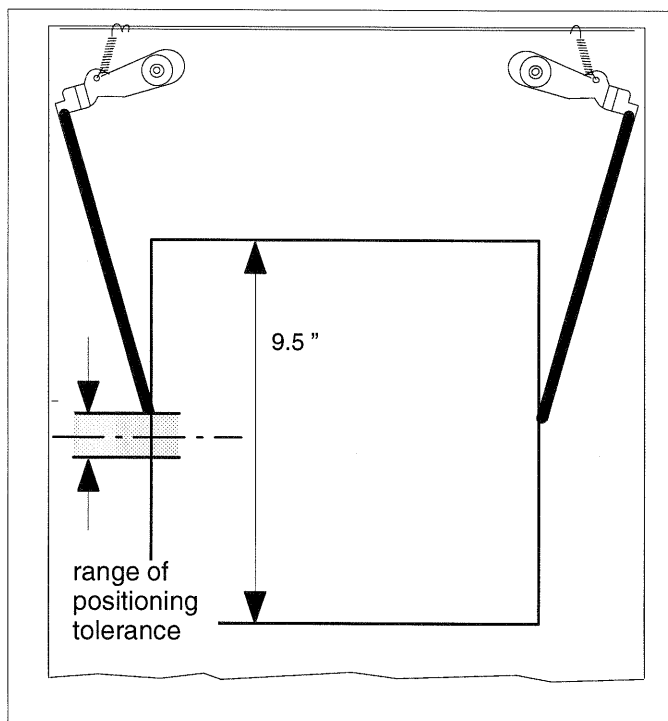


Cassette size	9.5"				10"			
Track on encoder disk	1	2	3	4	1	2	3	4
Bit pattern	L	L	H	L	L	L	H	H
Connector X20/22 pin	4 (pk)	5 (br)	6 (wt)	3 (gy)	4 (pk)	5 (br)	6 (wt)	3 (gy)
Measured								

L =  $\leq 11.4V$     H =  $> 11.4V$

## 8.2. Cassette Size Recognition horizontal

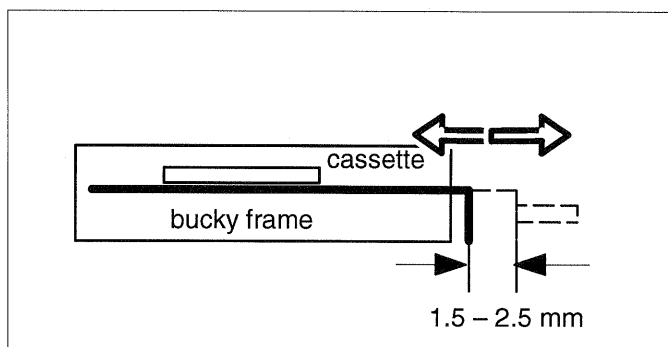
- Insert a cassette 9.5" x 12",  
9.5" = **horizontal**.
- The cassette size must be recognized within the range of  $\pm 2$  mm out of center. See displayed value on the control handle.



## 8.3. Switch Point of Cassette Size Recognition

The switch points of vertical and horizontal recognition of the cassette size must be coincident when the cassette tray will be inserted or removed. This switch point is 1.5–2.5mm before the cassette tray reached its final position in the bucky frame.

- Insert a cassette 7" x 5",  
5" = **horizontal**
- Check that the cassette format is still recognized within 2mm by moving in or out.  
Note:  
The cassette present switch must be closed also.
- If the cassette format is not recognized check vertical and horizontal signal. Adjustment procedure must be repeated as described before.



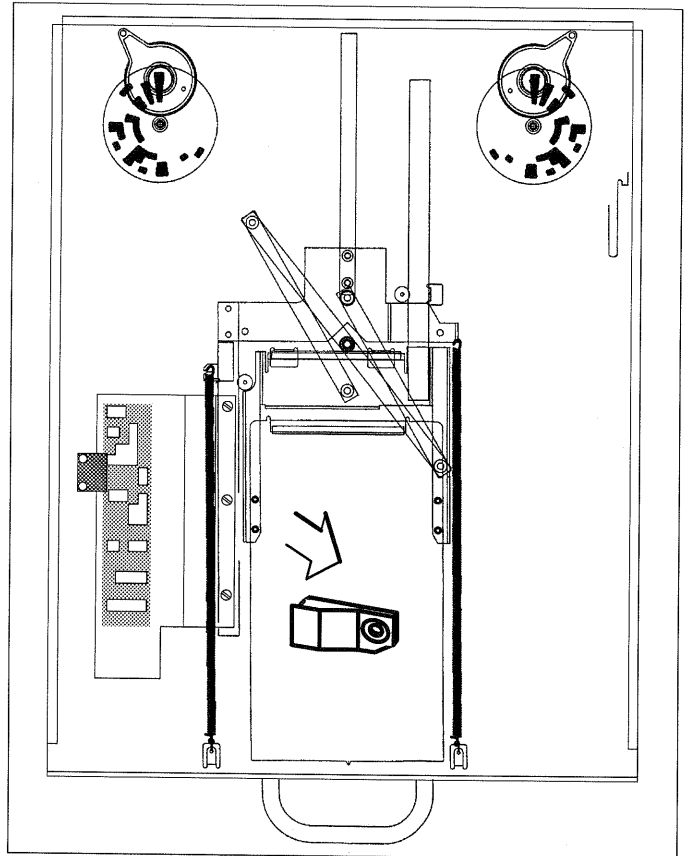
## 9. Final Works

- Assemble the items.
- Check functions of the bucky unit, make an exposure.

## Fixing Block

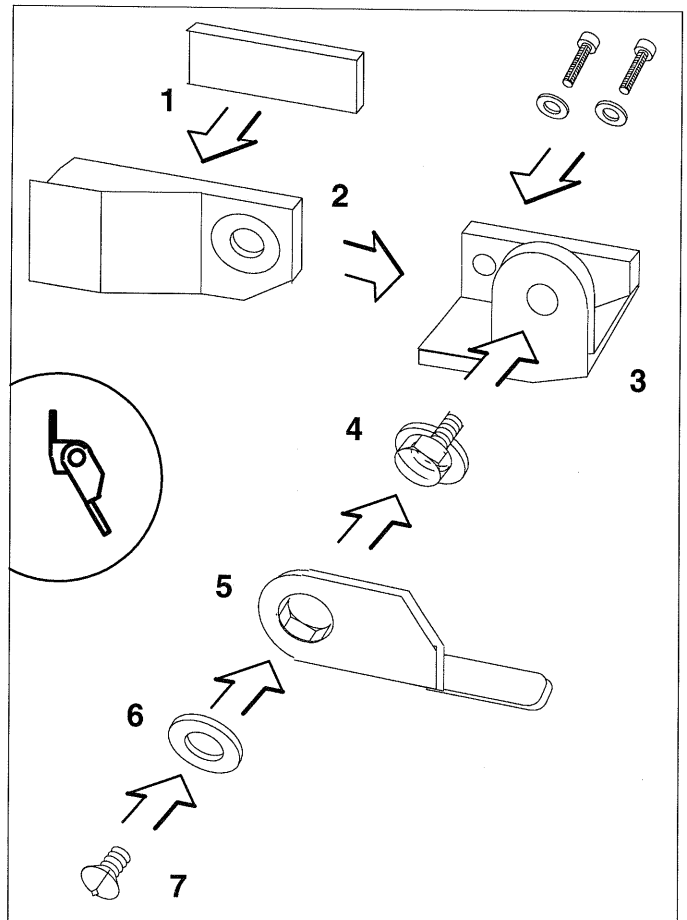
### 1. Placement of the Fixing Block

- Remove the cassette loader.
- Remove the black coloured fixing block by loosening both fixing screws.



### 2. Assembly

- Assemble the removed fixing block with the clamp as shown in the figure.
  - Insert the clamping plate 1 in the fixing block 2.
  - Insert this assembly in the clamping block 3.
  - Fix these parts to the cassette loader with the two screws supplied.
  - Insert the clamping screw 4.
- Install the clamping lever 5 in such a way that it holds the open cassette tray in its position when the lever is tightened.



### 3. Operation

- Insert a cassette.
- Lock the tray with the clamping lever.